

This listing of claims will replace all prior versions, and listings, of claims in the application

### **LISTING OF CLAIMS**

1-28. (canceled).

29. (new) A sensor arrangement for detecting particles that may be contained in an electrolytic analyte, comprising:

an operating electrode that can be electrically coupled with the electrolytic analyte, the operating electrode being arranged such that sensor events occur at the operating electrode given a presence in the sensor arrangement of the electrolytic analyte comprising possible particles to be detected;

an additional electrode that can be electrically coupled with the electrolytic analyte;

an operating circuit coupled with the operating electrode, which operating circuit is arranged such that it adjusts an essentially constant potential difference between the operating electrode and the additional electrode; and

a device that is arranged such that it keeps essentially constant a ratio of electrical currents flowing at the operating electrode and the additional electrode.

30. (new) The sensor arrangement according to claim 29, wherein the electrolytic analyte comprises:

a substance bound to the particles to be detected, which substance possesses a first redox potential in a first concentration in the electrolytic analyte; and

a secondary substance with a second redox potential at a second concentration in the electrolytic analyte, whereby the second concentration is at least as large as the first concentration, and whereby an electrochemical reaction with participation of the substance bound to the particles to be detected ensues given sensor events at the operating electrode.

31. (new) The sensor arrangement according to claim 30, wherein the essentially constant potential difference between the operating electrode and the additional electrode is set to a value that is larger than or equal to a difference between the first redox potential and the second redox potential.

32. (new) The sensor arrangement according to claim 29, wherein the operating circuit comprises an output at which is provided, when there are sensor events, an electrical sensor signal characterizing the sensor events.

33. (new) The sensor arrangement according to claim 29, that is monolithically integrated according to at least one of: a) in a substrate; and b) on a substrate.

34. (new) The sensor arrangement according to claim 29, wherein a first part of sensor arrangement components is provided external from a substrate, and wherein a second part of sensor arrangement components is fashioned according to at least one of: a) in a substrate; and b) on a substrate.

35. (new) The sensor arrangement according to claim 29, wherein the arrangement is arranged as an electrochemical sensor arrangement for detection of at least one of oxidizable and reducible substances.

36. (new) The sensor arrangement according to claim 29, wherein the arrangement is arranged as a biosensor arrangement for detection of biomolecules.

37. (new) The sensor arrangement according to claim 36, wherein the arrangement is arranged for detection of at least one of DNA molecules, oligonucleotides, polypeptides and proteins.

38. (new) The sensor arrangement according to claim 29, wherein capture molecules are immobilized at least at the operating electrode.

39. (new) The sensor arrangement according to claim 36, wherein the arrangement is arranged as a redox cycling sensor arrangement.

40. (new) The sensor arrangement according to claim 36, wherein the arrangement is arranged as a dynamic biosensor arrangement.

41. (new) The sensor arrangement according to claim 29, wherein the operating electrode and the additional electrode comprise a surface of essentially the same size.

42. (new) The sensor arrangement according to claim 29, wherein the device is an electrical circuit.

43. (new) The sensor arrangement according to claim 42, wherein the additional electrode is an additional operating electrode that is arranged such that sensor events occur at the additional operating electrode given the presence in the sensor arrangement of an electrolytic analyte comprising possible particles to be detected.

44. (new) The sensor arrangement according to claim 43, wherein the operating circuit further comprises:

a counter-electrode that can be electrically coupled with an electrolytic analyte, the counter-electrode being arranged such that electrical charge carriers are provided as needed to the electrolyte by way of the counter-electrode, based on a comparison of the electrical currents at the operating electrode and at the additional operating electrode, such that essentially a constant potential difference is set between the operating electrode and the additional operating electrode.

45. (new) The sensor arrangement according to claim 43, wherein the electrical circuit comprises:

a current reflector circuit which is connected such that it provides to the additional operating electrode an electrical current strength, in terms of magnitude, present at the operating electrode.

46. (new) The sensor arrangement according to claim 43, wherein the operating circuit comprises a source follower and precisely one operation amplifier.

47. (new) The sensor arrangement according to claim 29, wherein the device is an insulation device that is arranged such that it electrically insulates the electrolytic analyte, which is electrically coupled with the operating electrode and the additional electrode, from an environment of the electrolytic analyte.

48. (new) The sensor arrangement according to claim 47, wherein the additional electrode is a constant potential electrode that is brought to a constant electrical potential.

49. (new) The sensor arrangement according to claim 47, wherein the additional electrode is coupled with the operating circuit.

50. (new) The sensor arrangement according to claim 47, wherein:

the operating electrode comprises a functionalization, at which functionalization sensor events occur; and

the additional electrode comprises charge carrier reservoir material that, in the case of sensor events, electrical charge carriers are provided at the operating electrode to buffer current surges due to sensor events at the operating electrode.

51. (new) The sensor arrangement according claim 49, further comprising:

a constant potential electrode electrically coupled with the electrolyte, which constant potential electrode is brought to a constant electrical potential.

52. (new) A sensor array comprising a plurality of sensor arrangements according to claim 29.

53. (new) The sensor array according to claim 52, wherein the sensor arrangements are arranged in an essentially matrix-like manner.

54. (new) The sensor array according to claim 52, further comprising:  
a control circuit that is arranged for at least one of activation, selection,  
and readout of a sensor arrangement or of a part of the sensor  
arrangements.

55. (new) The sensor array according to claim 52, wherein the additional electrode is mutually provided for at least one part of the sensor arrangements and is arranged as a constant potential electrode that is brought to a constant electrical potential.

56. (new) The sensor array according to claim 52, wherein:  
in at least one part of the sensor arrangements, the respective additional  
electrode is coupled with the respective operating circuit, and  
comprises the one common constant potential electrode that is  
brought to a constant electrical potential.